

Application No.: 09/828,225

Docket No.: 20386-00295-US

REMARKS

Claims 4, 5, 7-14 and 17-26 are pending. Claims 1-3, 6, 15 and 16 are canceled.

Claim Rejections - 35 U.S.C. §103

Applicants respectfully request reconsideration and withdrawal of the rejection of claims 4, 5, 7, 17, 20, 21, 24 and 25 under 35 U.S.C. §103(a) as being unpatentable over Hyppanen (WO 97/46829).

Claim 24 recites:

A system including at least one process chamber in connection with a fluidized bed reactor for utilizing, for heat transfer purposes, internal circulation or external circulation of solid material, or both internal circulation and external circulation of the solid material, wherein the at least one process chamber comprises:

an interior limited by side walls having a lower part and an upper part, wherein the interior enables a flow of the solid material;

heat exchanger means provided within said interior for heat transfer from the flow of the solid material to a heat transfer medium inside the heat exchanger means;

a top closed barrier wall forming a roof of the at least one process chamber;

a process chamber inlet for carrying the solid material into the at least one process chamber, wherein the process chamber inlet is arranged in the lower part of one of the side walls; and

a process chamber outlet for carrying the solid material out of the at least one process chamber, wherein the process chamber outlet is arranged in the upper part of one of the side walls; and

wherein the fluidized bed reactor comprises:

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a furnace and furnace walls limiting the furnace, wherein the at least one process chamber is located inside the furnace of the fluidized bed reactor adjacent to at least one wall of the furnace walls; and

at least one inlet chamber for directing the solid material to the process chamber inlet, wherein the at least one inlet chamber is disposed prior to the process chamber in the direction of the flow of the solid material, wherein the at least one inlet chamber extends in a vertical direction and ends in an open top inside the furnace, wherein the open top is arranged to receive the flow of solid material.

As shown above, claim 1 recites that the at least one inlet chamber for directing the solid material to the process chamber inlet extends in a vertical direction and ends in an open top inside the furnace. In Hyppanen, the dilution chamber 216, which may be considered an inlet chamber, is not located inside the furnace (reactor chamber 212) and further does not have an open top as recited in claim 24. In Hyppanen, the material enters through a reactor chamber outlet 226 into the dilution chamber 216 (see page 13, last paragraph of Hyppanen). Thus, the reactor chamber outlet 226 is the inlet to the dilution chamber 216. The use of the term "reactor chamber *outlet* 226" makes it clear that the material is directed outside of the reactor chamber 212, and the reactor chamber outlet 226 is therefore not located inside the reactor chamber 212. Additionally, unlike the recited inlet chamber, the dilution chamber 216 does not have an open top, but is rather topped by the inclined reactor chamber outlet 226. Thus, the chamber 216 does not possess the properties of the claimed inlet chamber.

Claim 24 further recites that the at least one process chamber is located inside the furnace of the fluidized bed reactor. On page 4 of the final Office Action, the Examiner stated that the process chamber 218 is not shown to be located inside the furnace of the fluidized bed reactor, as presently claimed. However, the Examiner asserted that portions of the description in Hyppanen (preceding the detailed description of the embodiments) suggest the possibility of locating process chambers inside the furnace. For example, the Examiner stated that page 1, lines 17-22 of Hyppanen states that "[t]he heat transfer chamber may in some special case even be formed within the processing chamber itself." However, this statement is located in the FIELD OF THE

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INVENTION and is not stated in connection with any of the embodiments in Hyppanen applied by the Examiner. Further, the language cited by the Examiner on page 2, lines 5-10 of Hyppanen is in the BACKGROUND OF THE INVENTION and does not represent the specific embodiments described in the document. The aforementioned descriptions in the introductory sections of the Hyppanen documents are a discussion of the art in general, and do not discuss embodiments of the purported invention. One skilled in the art would understand the introductory comments directed to the alternative locations of heat transfer chambers as background information only. The discussion of the alternative heat transfer chamber locations does not teach one skilled in the art how such locations could be applied to the embodiments described in detail later in the document.

For at least the above reasons, claims 4, 5, 7, 17, 20, 21, 24 and 25 are patentable over Hyppanen.

Applicants respectfully request reconsideration and withdrawal of the rejection of claims 5, 7-12, 14, 17-21 and 23-26 as being unpatentable over Dietz (US 5,299,532) in view of Hyppanen.

Dietz shows a process chamber in connection with a fluidized bed reactor. Conduits 58a and 58b return material from corresponding separators 40a and 40b. There is no separate open-topped inlet chamber inside the furnace for directing the solid material to the inlet of the process chamber. In Dietz, conduits 58a and 58b open into the rear walls of inlet chambers 94a and 94b, respectively (Figs. 2 and 4). The chambers 94a and 94b communicate with chambers 92a, 96a, 92b and 96b through openings 112a, 114a, 112b and 114b (Fig. 4), which are all closed at the top (partition portions 24a'' and 24b''), rather than open, as recited in claim 24.

Contrary to the teachings of Dietz, in the invention of claim 24, the flow of solid material to the inlet at the top of the inlet chamber is possible (i.e., from inside the fluidized bed reactor along with the internal circulation). The inlet to the inlet chamber 94a, 94b is not open at the top, but is closed by the upper portions 24a'' and 24b'', as discussed in the last paragraph on page 6 of the final Office Action. These upper portions close the inlet chambers 94a, 94b as well. The

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outer conduits 58a, 58b from the separators 40a, 40b enter the rear walls of the inlet chambers 94a, 94b.

On page 17, lines 10-26, Hyppanen states "... it is possible to combine embodiments shown above and introduce solid particles from an external solid particle circulation, via a return duct, and/or directly from the reactor chamber from the internal solid particle circulation therein, to the dilution chamber. This requires combining the embodiments of FIGS. 1 and 2, which still leaves both chambers 216, 218 outside the reactor chamber 212, contrary to the requirements of claim 24.

Furthermore, Dietz does not discuss any possible combination of different embodiments and does not even show an embodiment where solid particles are introduced from the internal solid particle circulation. Thus, there is no motivation to combine the teachings of Hyppanen and Dietz as suggested by the Examiner, and the proposed combination can only be reached through the improper use of hindsight. Therefore, claim 24 and dependent claims 5, 7-12, 14, 17-21 and 23-26 are not obvious in view of Dietz and Hyppanen.

Allowable Subject Matter Indicated by the Examiner

Claims 13 and 22 stand objected to as depending from a rejected base claim. The Examiner indicated that claims 13 and 22 contain allowable subject matter and would be allowable if rewritten in independent form. Applicants thank the Examiner for the indication of allowable subject matter. However, Applicants respectfully request reconsideration and withdrawal of the objection, as base claim 24 is believed to be allowable for the reasons provided above.

Conclusion

In view of the above amendment, applicants believe the pending application is in condition for allowance.

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Applicants believe no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 20386-00295-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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